

Principal Examiner Feedback

Summer 2014

Pearson Edexcel Level 2 Award
In Algebra (AAL20)

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Edexcel Award in Algebra (AAL20)

Principal Examiner Feedback – Level 2

Introduction

This level 2 examination paper provided all students with the chance to show what they knew.

Whilst some students were well prepared others seemed less so. Centres are advised to ensure all students are fully prepared for this level 2 algebra award examination which is slightly different to the GCSE system.

Good students were able to display a range of skills and techniques whilst weaker performances were characterised by poor graph sketching, inaccurate arithmetic and failure to answer the question asked. Particular attention should be paid to dealing with negative numbers and fractions

Students should expect to be tested on all areas of the specification and will be at an advantage if they have experience of all topics stated in the specification.

Reports on Individual Questions

Question 1

Many students demonstrated a good understanding of what was required in this question. The first three parts were well answered.

However in part (d), many students did not simplify fully or stated the power of p incorrectly.

Question 2

A significant number of students were able to succeed on this question. Some errors of only partial factorisation were seen in part (d).

Question 3

The first two parts of this question were well answered. Most students were able to plot the points but some then failed to draw the curve, this meant the loss of one mark which should not really have happened. A few students treated this as a scatter diagram and drew a line of best fit. Centres should ensure that students are familiar with curves as well as straight line graphs.

In part (c), a multitude of approaches were seen but few showed sound understanding. The concept of reading two points from a graph and subtracting should be a solid level 2 skill.

Question 4

The majority of students scored on this question, with a good proportion gaining full marks. Some students mixed up graphs but A and D were often correctly labelled.

Question 5

Part (a) was the most frequently correct answer in this question. The most common mistake was to not multiply the 1 in the bracket by 2. Another, less common mistake, was to multiply everything by 2 including the 3. Only a few students struggled to accept that the answer was a not an integer, arriving at $2c = 5$ but still giving c as 2.

Part (b) saw the most confused answers. $3h - h = 2h$ was often seen somewhere in the working. Unfortunately this was not often related to $2 - 8$.

$2h + 6$ with no equals sign was seen as was $2h = 6$. A negative answer appears to be beyond some students and centres should ensure that students are prepared for fractional, negative and negative fractional solutions to equations.

Question 6

On the whole this question was well answered. The major problem was again carrying out arithmetic with negative numbers. $-8 + 3 = 11$ was seen far too often.

Question 7

Part (a) had a gradient of 0 and some students gave this whilst others tried to work out a gradient and often gave 1 as the answer. Centres should be encouraged to discuss the gradient of lines of the form $y = c$.

Part b was answered in a variety of ways. It was encouraging to see that most students tried to give an equation of the answer. Some failed to use y , others failed to use x but the biggest error was in not giving a negative gradient. 2 was often given as the gradient.

Question 8

Part (a) was well answered. Some students struggled with the n th term, as usual $n+8$ was seen several times but $8n - 5$ was seen many times.

Part (b) may be viewed as a slightly different style of question but many students gave the correct answer. Some started at 3 and not 7 so were out of synchronisation with the required terms. The other error seen was for students to repeatedly subtract 10 from each previous term. Careful reading of the term to term rule is required for these types of questions.

Question 9

This question is progressive in difficulty and the marks achieved reflect this fact. Part (a) was well answered and part (b) was usually well answered with the main error occurring in the second term. Some students forgot to include a u in this term.

Part (c) was often correct but occasionally the second term of each expansion was incorrect. If the correct four terms were achieved the simplification of the four terms to three was usually accurate.

Students found part (d) difficult, again the use of the negative sign caused some problems but so did the cubic term. Practice with higher powers should be encouraged.

Question 10

Parts (a) and (b) were well answered, as was part c(i). Centres should encourage students to consider if units are required in answers. If $£h$ is stated and the answer for h is required then units would not be required in the answer. Also students should read the question carefully for changing units. For example 60 guests was sometimes given as $£60$, these small errors were not penalised on this paper but students should try to be accurate and answer the question specified.

Part c(ii) was not so well answered. Many students did not try to find the gradient. Answers ranged greatly some just read off one point and dividing the total cost by the number of guests. There were errors in both the readings and the arithmetic.

Question 11

This question was not well answered. Many students did not write down expressions some gave equations, others tried to write expressions but included units. Again units should not be included in expressions $5xp$ is not the same as $5x$. Many students tried to use 35 in their answers but correct interpretation of question is required to see that this is not necessary.

As an algebra qualification it is imperative that students can distinguish between equations and expressions.

Question 12

Part (a)(i) was well answered. Occasionally there was an arithmetic error preventing full marks.

Part (a)(ii) was not well answered. Many students multiplied by 2 first BUT only multiplied the N , not the 3 as well. A few students tried to use function machines but this rarely led to the correct answer as they could not translate the function machine back to algebra. Others did not answer the question stated but substituted the numbers given in part (a)(i) of the question to arrive at a numerical answer.

In part (b) the square root proved beyond many. Students were able to see the need for 20 divided by 5 but once they had 4 they did not know what to do with it. Some gave q as 4 others square rooted their 4 and gave q as 2

Question 13

This question was difficult for some students. Few saw the link between part (a) and part (b). $(-2)^2 = -4$ was a popular incorrect answer.

Students do need to be able to sketch graphs for this qualification and the evidence from this question would suggest that this is not a skill most possess. Parabolas were rarely seen and the correct parabola was seen even less.

Question 14

Part (b) was better answered than part (a). In part (a) the scale was often ignored but the link that 30 minutes is 0.5 of an hour was also rarely stated. Even when $1.6 \div 0.5$ was given students often wrote 0.8 instead of 3.2

In part (b), a surprising number of students did not draw the final line all the way to the x axis and so lost the last mark.

Question 15

Almost all students scored on this question. They were able to fill in the table with at least some answers correct, again the negative value was the least well calculated answer. Most students were able to plot the points and usually drew a curve rather than a series of line segments.

Because of the inaccuracies in part (a) often an incorrect curve was drawn in part (b), this could gain part marks. Students rarely realised when their graph was obviously incorrect and did not re-think the values obtained in their table.

Part (c) was attempted only by the most able of the pupils and was usually correct when attempted.

Question 16

Again a well differentiated question. Part (a) was well answered. Part (b) was often partially correct and part (c) had the correct line but often the circle was incorrect or the line finished at $t=5$ with another circle being drawn. Open inequalities need to be indicated by the use of an arrow or the lack of a circle.

The rearrangement required in part (d) was beyond some students. Even those that could rearrange could not always place the correct inequality sign in the final answer.

Summary

Based on their performance on this paper, students are offered the following advice:

- ensure you have a good understanding of all topics in the specification
- make sure you know the difference between an expression and an equation
- learn how to deal with negative signs in both numerical and algebraic manipulation
- practise your skills at both curve sketching and drawing graphs, be able to do both to an appropriate accuracy

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